

# FUSIONSOLAR RESIDENTIAL SMART PV SOLUTION

## SUN5000 Series



**Efficiency Evolution**  
 Creating Profitable Return  
 Module-level Optimization  
 Increasing Yield by 5% to 30%



**Safety Evolution**  
 Protecting Electricity Usage Safety  
 On the Rooftop  
 AFCI + RSD



**Convenience Evolution**  
 Embracing PV Lifestyle  
 Module-level Management  
 Disconnection Detection and Location

Technical Specification	SUN2000-450W-P2	SUN2000-600W-P
Input		
Rated input DC power <sup>1</sup>	450 W	600 W
Absolute max. input voltage		80 V
MPPT operating voltage range		10–80 V
Max. short-circuit current (Isc)		14.5 A
Max. efficiency		99.5%
Weighted efficiency		99.0%
Overvoltage category		II
Output		
Max. output voltage		80 V
Max. output current		15 A
Output bypass <sup>2</sup>		Yes
Output voltage during standby <sup>3</sup>		0 V
Output impedanceduring standby		1 kΩ ± 10%
Communication		
Communication protocol		MBUS
Standards Compliance		
Safety		IEC62109-1 (class II safety)
RoHS		Yes
Fire Safety		VDE-AR-E 2100-712:2018-12
General Specifications		
Dimensions (W x H x D)	75 mm x 140 mm x 28 mm (3.0 in. x 5.5 in. x 1.1 in.)	
Weight (including cables)	0.6 kg (1.3 lb.)	
Installation part (optional)	Frame mounting bracket/T-shaped bolt <sup>4</sup>	
Input connector	Staubli MC4	
Input wire length	0.15 m (0.49 ft.)	
Output connector	Staubli MC4	
Output wire length	1.3 m (4.3 ft.)	
Operating temperature/humidity range	–40°C to +85°C <sup>5</sup> /0%-100%	
IP rating	IP68	

<sup>\*1</sup> The maximum power of PV module at STC shall NOT exceed the "Rated Input DC Power" of the power optimizer. PV modules with up to +5% power tolerance are allowed.

<sup>\*2</sup> Any power optimizer, which is connected to an operating inverter in a PV string, will be bypassed when it fails.

<sup>\*3</sup> Once the power optimizer stops working, its output voltage is reduced to 0 V.

<sup>\*4</sup> It is for PV module frame/extruded aluminum profile racking system installation.

<sup>\*5</sup> When the operating temperature of the SUN2000-450W-P2/600W-P reaches 70 °C to 85 °C, it may shut down due to over-temperature protection and report an over-temperature alarm. After the temperature decreases, it can automatically resume working without causing any damage.

## Technical Specification

Technical Specification	SUN5000-8K-MAPO	SUN5000-12K-MAPO
Efficiency		
Max. efficiency	98.6%	98.6%
European weighted efficiency	98.0%	98.2%
Input (PV)		
Recommended max. PV power	14,600 Wp	22,000 Wp
Max. input voltage <sup>1</sup>	1100 V	
Operating voltage range <sup>2</sup>	160-1000 V	
Startup voltage	160 V	
Rated input voltage	600 V	
Max. input current per MPPT	16 A	
Max. short-circuit current	22 A	
Number of MPP trackers	2	
Max. input per MPP tracker	1	
Input (DC Battery)		
Compatible battery	LUNA2000-5/10/15-S0 / LUNA2000-7/14/21-S1	
Operating voltage range	600-980 V	
Max. operating current	20 A	
Max. charging power	12,000 W	
Max. discharging power	8000 W	12,000 W
Output (On Grid)		
Grid connection	Three-phase	
Rated output power	8000 W	12,000 W
Max. apparent power	8800 VA	13,200 VA
Rated output voltage	220 V AC/380 V AC, 230 V AC/400 V AC, 240 V AC/415 V AC 3W/N + PE	
Overload capability	110%	
Rated AC grid frequency	50 Hz/60 Hz	
Max. output current	13.3 A	20.2 A
Adjustable power factor	0.8 leading ... 0.8 lagging	
Max. total harmonic distortion	≤ 3%	
Output (Off Grid)		
Compatible backup device	SmartGuard-63A-T0 (3 phase)	
Rated output power	8000 W	12,000 W
Rated output voltage	220 V AC/380 V AC, 230 V AC/400 V AC, 240 V AC/415 V AC 3W/N + PE	
110% overload	Continuous	
150% overload	5 min (3-phase) / 5 min (Single-phase)	1 min (3-phase) / 5 min (Single-phase)
200% overload	10 seconds	
Automatic switchover time	≤ 20 ms (with SmartGuard-63A-T0)	
Protection Feature		
Asymmetric load	Yes, supports 100% three-phase asymmetric load	
Input-side disconnection device	Yes	
Anti-islanding protection	Yes	
DC reverse polarity protection	Yes	
Insulation detection	Yes	
DC surge protection	Yes, compatible with TYPE II protection class according to EN/IEC 61643-11	
AC surge protection	Yes, compatible with TYPE II protection class according to EN/IEC 61643-11	
Residual current detection	Yes	
AC overcurrent protection	Yes	
AC short-circuit protection	Yes	
AC overvoltage protection	Yes	
Arc fault protection	Yes	
Terminal temperature detection	Yes (PV & Battery & Optimizer connectors)	
Ripple receiver control	Yes	
Battery charging from grid	Yes	
RSD function	Yes	
General Specification		
Operating temperature range	-25°C to +60°C (-13°F to +140°F)	
Relative operating humidity	0% - 100% RH	
Max. operating altitude	4000 m	
Cooling	Natural convection	
Noise	≤ 29 dB	
Display	LED Indicators; Integrated WLAN + FusionSolar APP	
Communication	RS485; WLAN / Ethernet via Smart Dongle-WLAN-FE (Optional) 4G/3G/2G via Smart Dongle-4G (Optional); EMMA (Optional)	
Weight (incl. mounting brackets)	21 kg	
Dimensions (incl. mounting brackets)	490 mm x 460 mm x 130 mm	
IP rating	IP66	
Nighttime power	< 5.5 W	
Optimizer Compatibility		
DC MBUS compatible optimizer <sup>3</sup>	SUN2000-450W-P2, SUN2000-600W-P	
Safety	Standards Compliance (More Available Upon Request) EN/IEC62109-1, EN/IEC62109-2	
Grid connection standards	IEC61727, IEC62116, MEA/PEA, G99/G100, Philippine Grid Code Resolution No. 07, NRS 097-2-1, EN50549-1, VDE4105, UTE15-712-1/VFR 2019, UNE217002, NTS631, RD244(UNE217001), PPDS, ROGA, TOR Erzeuger, CEI 0-21:2020-12 V1, C10/C11	
PV System Design <sup>4</sup>		
Min. string length (power optimizers)	6	
Max. string length (power optimizers)	35	
Max. DC power per string	12,000 W	

\*1 The max. input voltage is the upper limit of the DC voltage. Any higher input DC voltage would probably damage the inverter.

\*2 Any DC input voltage beyond the operating voltage range may result in inverter malfunction.

\*3 The SUN5000 Series Inverters must be fully equipped with optimizers, otherwise the system will report errors and can not work.

\*4 SUN2000-450W-P2/600W-P, MERC-600W-PA0 can NOT be used in mixture under the same Smart Energy/PV Controller.

Disclaimer: The preceding values are measured by an internal laboratory of Huawei in a specific environment. The actual values may vary with products, software versions, usage conditions, and environmental factors.